CITY OF KIRKLAND
Department of Public Works
123 Fifth Avenue, Kirkland, WA 98033 425.587.3800
www.kirklandwa.gov

This memo was originally presented in November of 2012 to the City Council. It was also included in the January 7, 2014 packet. It provides background on the Concurrency and level of service approach that the Transportation Commission endorsed in 2012.

MEMORANDUM

To: Kurt Triplett, City Manager

From: David Godfrey, P.E., Transportation Engineering Manager
Ray Steiger, P.E., Public Works Director

Date: Presented in the November 20, 2012 and January 7, 2014 Council Study Session Packets

Subject: Level of Service/Concurrency/Project selection

Over 10 years ago, the Transportation Commission was formed to grapple with the questions of concurrency and level of service. Although the scope of the Commission's work has broadened, the question of improving concurrency has remained on the Commission's work program for much of its history.

Most recently, the Commission has been working on three concurrency and level of service related items arising from the Transportation Conversations document presented to Council in June of 2010:

1. Review and revise concurrency system
2. Develop new level of service standards that align with transportation principles and further define what are those principles
3. Develop clear goals and prioritization systems for project categories

The Transportation Conversations document lays out the reasoning behind the need for addressing these issues in more detail. This memo summarizes Commission thinking that has been developed over more than 18 months of working on these questions. The Transportation Commission has agreed to a fairly clear plan of action for items 1 and 2. For item 3, the missing pieces have been identified, but filling in those pieces is not simple. Further, full development of item 1 requires a clear set of projects and completing item 3 is needed to develop that set of projects.

1. Review and revise concurrency system

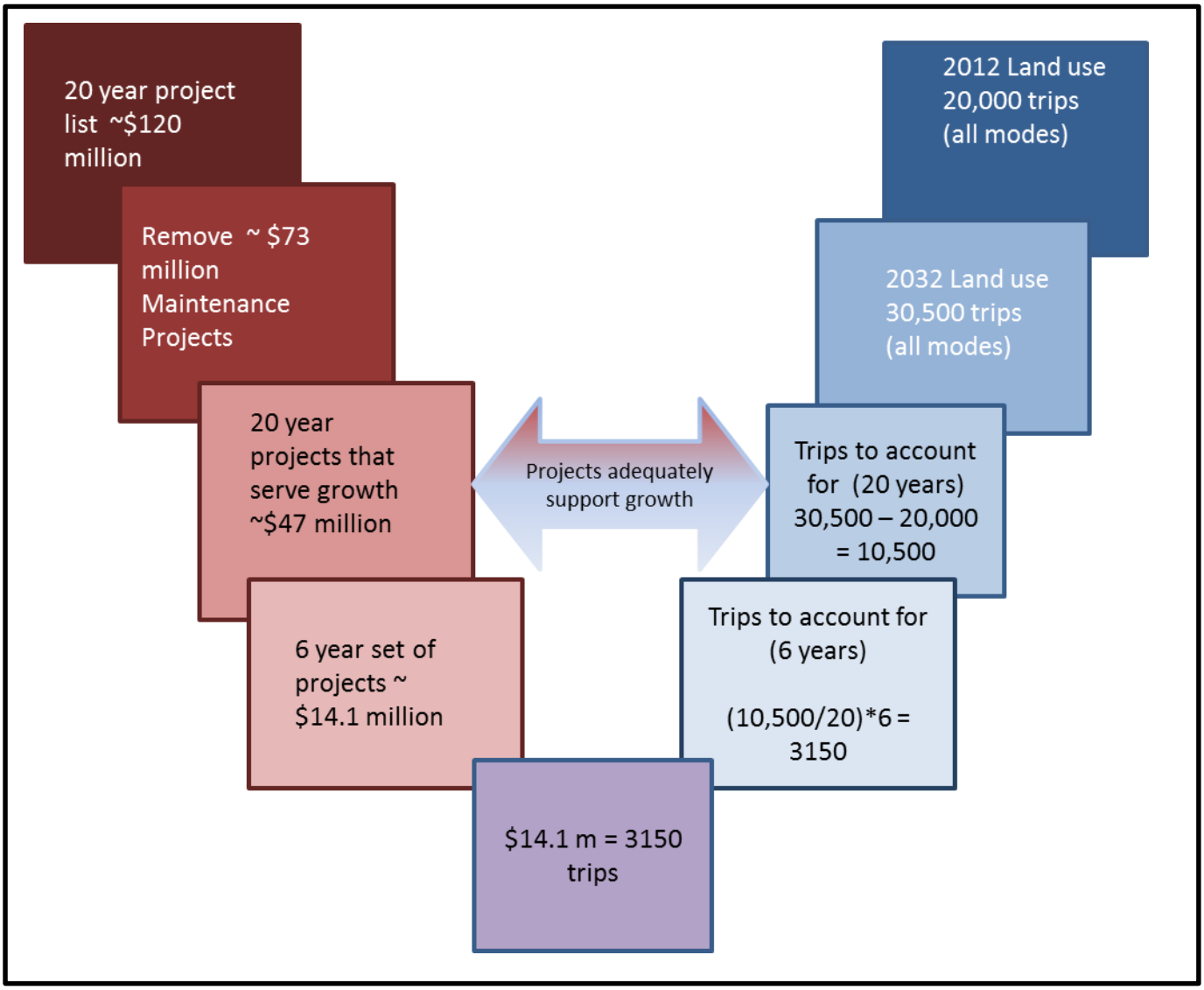
As recommended in Transportation Conversations, "Concurrency should be simplified and should consider transit, bicycling and walking…Concurrency should principally monitor the approved land

use and transportation plans and insure that they are being completed in relative balance." Concurrency should help achieve land use and transportation goals, not be an impediment to achieving the goals. With its sole focus on auto capacity at traffic signals, the current concurrency system does not help achieve the performance measures associated with a balanced transportation plan.

The Commission recommends adopting a concurrency system similar to the system in use by the City of Redmond. The City of Redmond has been successfully using their system for about 2 years. In this system, an agreed upon transportation project list that is fundable over the next 20 years is developed. This list does not include maintenance projects; only those projects that add capacity for any mode. Similarly, a land use plan for that same 20 year time period is identified.

The number of total new trips is assigned to be equal to the new capacity of the total project list. This translation between trips and projects means that the capacity (in trips) can be determined for a given list of projects, such as funded projects on the 6-year CIP.

Figure 1, Relationship between Trips and Transportation Projects



The number of total new PM peak person trips is assigned to be equal to the new capacity of the total project list as shown by the arrow in the chart above. This is an important concept because this is the point where the plans for land use and transportation are joined. Success requires having strong plans that are supported by the community. Concurrency will not decide whether or not development projects are "good" or "bad" only whether or not the number of new trips is being added at approximately the rate that capacity is being added. Furthermore, Concurrency will not decide whether or not the capacity being provided is the "right type" capacity. Again, this is decided when the transportation project list is determined and compared to the land use plan.

Equating trips and projects means that the capacity (in trips) can be determined for a given list of projects, such as funded projects on the following hypothetical 6-year CIP.

Table 1 Hypothetical 6 year funded list (excluding maintenance projects)

Project	Cost	New person trips
ITS project	$1,400,000	**312**
Road project 1	$1,100,000	245
Road project 2	$2,043,000	456
Ped project 1	$5,000,000	1115
Ped project 2	$400,000	89
Bike project 1	$1,210,000	270
Bike project 2	$470,000	105
Bike project 3	$2,500,000	558
TOTAL	$14,100,000	3150

Note that all project types in the Transportation Plan contribute to capacity. A concerned person might ask "Do you expect all that new growth to be handled by bike lanes?" That question should be answered earlier in the process, where the Land Use Plan and Transportation Plan are developed. These two plans have to be in balance with the balance representing level of service. Concurrency's role is to indicate whether or not the transportation facilities, regardless of their type, are being constructed at a rate approximately equal to the rate at which the land use plan is being fulfilled.

A ledger system can be set up, with a balance of trips "available" based on funded projects. As new land development projects are considered, the trips being proposed are compared to the trips available. If more trips are available than are being proposed by the new land development project, the project passes concurrency. If a project passes concurrency, it's future trips are subtracted from the balance. Trips are added to the balance when transportation projects are added to the funded CIP. This system requires that if concurrency is to be maintained, the 20-year project list needs to be implemented at a rate equal or faster than the rate of development.

If fewer trips are available than what are required by the development, the development can:

- construct transportation improvements that add trip capacity
- wait until more trip capacity is built by the City
- scale back the development scope so that it requires less trip capacity.

Table 2 Sample ledger system for Concurrency

Date	Item	Trips	Balance	Pass?
1/1	Start with 6 years of funded projects	+3150	3150	n/a
Throughout the year	Development 1 (10,000 sq. ft. retail; 100 units residential)	-124	3026	Yes
	Development 2 (200 units residential)	-109	2917	Yes
	Development 3 (Retail store expansion)	-65	2852	Yes
	Other projects (details omitted here) total	-200	2758	Yes
12/31	New CIP approved resulting in another year of funded projects	+525	3283	n/a

One of the advantages of this system is its simplicity. It's clear to developers, staff and the public how many trips are available for development at any given time. Because many land uses have standard trip rates associated with them, a table showing the number of trips a given size of development will contribute can be made. This allows anyone to understand the implications of a development to concurrency, and it streamlines the development review process.

Table 3 Sample Trip rates for various land uses		
Example Land use	**Unit**	**Trips**
Attached and stacked housing	Dwelling	0.56
Restaurant	1000 sq ft	7.49
Drive-in bank	1000 sq ft	45.74
Shopping Center	1000 sq ft	3.75
General Office Building	1000 sq ft	1.49
Supermarket	1000 sq ft	10.45

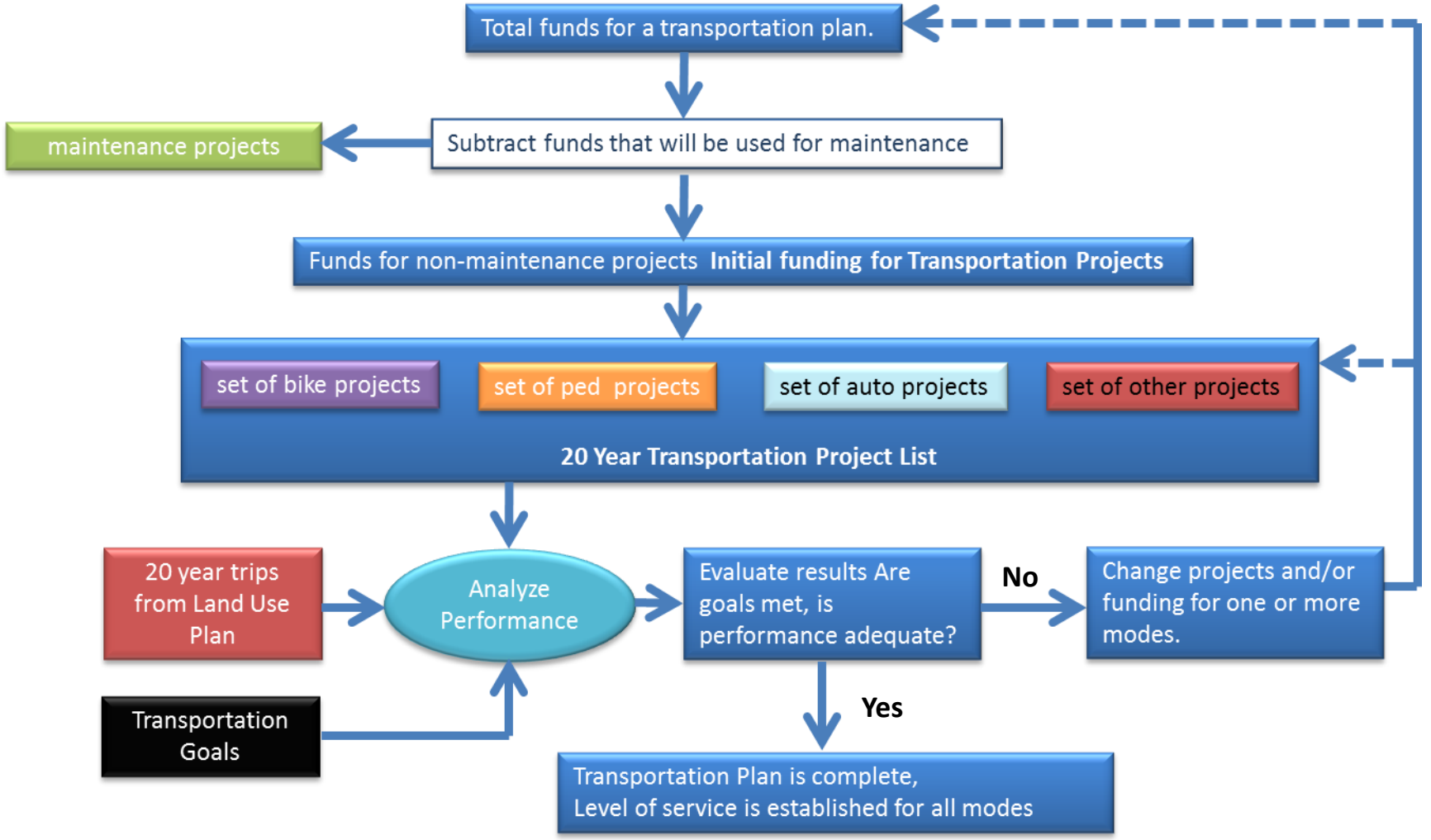
In contrast, the concurrency system we use today requires that, for each development, the number of trips that will go through each signalized intersection are estimated. Then, for each signal, a calculation is performed to determine the projected level of service at that signal. Finally, the performance of the signals is compared to the allowed level of service.

When concurrency is measured in this way – level of service at signalized intersections – only construction projects that add capacity at signalized intersections aid in meeting concurrency. It does not consider the full range of projects that should be in a transportation plan if that plan supports a balanced multi-modal transportation system. This is one reason why the Transportation Commission has recommended replacing the existing concurrency system.

2. Develop new level of service standards that align with transportation principles

As described above, Kirkland's current vehicular level of service standard measures the auto volume to capacity ratio at signalized intersections. The primary purpose of the existing level of service is for use in concurrency testing. With the concurrency system proposed in 1 above, a level of service is established for various modes when the capacity of the 20 year project list is set equal to the number of new trips to be added to the system over the same number of years. Level of service is used to decide whether or not the transportation system is adequate for the Land Use being proposed. The diagram below shows how, by using funding levels and performance goals for the transportation system, a set of projects can be developed. An iterative process is envisioned where performance and funding across modes is adjusted until a satisfactory transportation plan for these performance measures can be tracked annually to help monitor transportation system performance.

Figure 2. Setting Level of Service



3. Develop clear goals and prioritization systems for project categories

The Commission has explored this issue extensively in the context of developing a set of funded projects for the CIP. We looked at a framework for preparing a project list that suggests:

- Adopted Plan documents (e.g. Active Transportation Plan, ITS Plan) are based on adopted goals and performance measures.
- Projects enter into the CIP from adopted plans which contain clear prioritization methods and which can be used to develop project lists.
- As funding is available, prioritized lists of projects are completed. Level of service is used here to determine the types of projects that should receive funding.
- Evaluation of the system is based on adopted performance measures that come from the original goals. This evaluation drives new projects.

The table below shows, for different project types, where elements of the framework are missing (blank squares) and where they exist.

Table 4 Project types across a framework for project development non-maintenance

Project type	High level goals	Specific plan document	Prioritization methods	Funding	Evaluation
ITS	Council adopted Performance measure	ITS Plan	Priorities in plan	Grant funding has been the source of ITS funding	Performance measure
Bicycle network	Council adopted Performance measure	Active Transportation Plan describes a network			
Sidewalk construction		Active Transportation Plan establishes goals	Method in Active Transportation Plan and existing project selection method		
Crosswalk upgrades				Funding has been traditionally $35k/yr	
Auto network improvements	Comprehensive Plan sets traffic signal levels of service		Projects that are needed to meet concurrency		
School walk routes	Council adopted Performance measure for completion			Typically grant funded	

Table 5 Project types across a framework for project development Maintenance

Project type	High level goals	Specific plan document	Prioritization methods	Funding	Evaluation
Pavement maintenance	Council adopted Performance measure		Pavement maintenance software	Set in coordination with PCI goal	Measure PCI
Pavement marking Maintenance				Funding has been traditionally $250k/yr	
Traffic signal maintenance					
Sidewalk maintenance				Funding has been traditionally $200k/yr	

Although a complete or practically complete system exists for some project types, for example pavement maintenance, there are several key missing pieces in the city's current methods.

In order to fill in the missing pieces, the Commission recommends preparation of a comprehensive multimodal transportation plan that describes how all elements of the transportation system fit together under over-arching goals. Without clear, complete, integrated goals, it is difficult to develop a comprehensive set of prioritization methods. Without prioritization methods, project lists can't be developed in a straightforward manner. Without project lists it is difficult to determine where to best spend limited resources and identify critical funding gaps. It's worth noting that the City of Kirkland has never developed a multimodal Transportation Plan.

One helpful step in the process of filling in the table above was the Council's development of Performance measures (Figure 3) Unfortunately, given historic CIP funding, and the costs of the projects necessary to meet the measures, it is not possible to achieve all the measures simultaneously. Looking at a range of transportation projects under one plan will help alleviate this problem.

An update of the City's Comprehensive Plan is scheduled to begin in 2013. A Transportation Master Plan could potentially also serve as the Transportation Element of the revised Comprehensive Plan. The Comprehensive Plan update would also require an updating of the City's land use and transportation network.

Recommendation

The Commission recommends:

- Council affirm the direction proposed for the concurrency and Level of service systems. If the Council supports the proposal, the Transportation Commission would meet with the Planning Commission to hear their concerns and comments. Developing a complete Concurrency System requires a clear future land use plan and a companion list of transportation projects. The City's Comprehensive Plan update requires a revised land use plan and so will give the opportunity to supply the needed land use information.

- Funding for a transportation master plan be considered in the 2013-2014 budget process. A transportation master plan will allow missing gaps in project development system to be filled. Therefore such a plan would be an ideal opportunity to establish a transportation plan that reflects the needs of the new neighborhoods.

Figure 3 Performance measures for balanced transportation:

MEASURE	2008	2009	2010	2011	Target
Percent of Capital Improvement Program Transportation funding devoted to Active Transportation	*17.65%*	*28.76%*	*34.48%*	*21%*	*33%*
Percent of proposed Intelligent Transportation Systems projects completed	*	*	*4%*	*6%*	*100% of ITS Strategic Plan*
Complete sidewalk construction on at least one side of all school walk routes	*78.6%*	*	*81.1%*	*83%*	*100% by 2019*
Percent of bicycle network construction improvement projects completed	*	*	*50%*	*50%*	*100% by 2018*
Percentage of arterials that are complete streets	*	*	*58%*	*58%*	*100%*
Residents surveyed are satisfied with maintenance of active transportation facilities[1]	*83%*	**	*84%*	**	*90%*
Automobile crashes involving bikes	*12*	*8*	*17*	*14*	*0*
Automobile crashes involving pedestrians	*15*	*13*	*16*	*20*	*0*
Percent of total trips using active transportation mode (transit, pedestrian, bicycle)	***	***	***	***	*35% of trips in transit/other mode by 2022*
Major arterial travel times	***	***	***	***	***

[1] Active Transportation Facilities include sidewalks, bike lanes, pedestrian flags, in-pavement lights, etc
*No data available
**Community Survey occurs in even years
***Measure being refined for future reports
****2011 data excludes needs in annexation area. Assessment of need will take place in 2012.